Method For Determining Charges in Real Time For Value-Added Services in a Telecommunication Network

The present invention relates to a method for determining charges in real time for value-added services in a telecommunication network.

There are various methods for implementing value-added services in telecommunication networks. In telecommunication networks such as public switched telephone networks and mobile telephone networks, some value-added services are offered as services by the network operator. Common services include communication-specific services that facilitate or expand upon connections-oriented traffic. The best known examples of this type are ISDN (Integrated Services Digital Network) and GSM (Global System for Mobile Communications) features of the corresponding ETSI (European Telecommunications Standards Institute) recommendations including call diversion, call forwarding, callback on busy, call waiting, etc. These services are implemented and operated by the network operator in the telecommunication network (in public exchanges) and in the intelligent network control SCP (Service Control Point) and SMS (Service Management System). In addition, there are value-added services such as voicemail (answering machine), messaging, recorded information service, information service (weather, lottery numbers, news, or the like) that are offered by the network operator or by external value-added service providers. These can also include traffic information services. As a rule, this service category can only be accessed by network-specific customers when they dial corresponding telephone numbers; as a rule, the use of the service is linked to calling the value-added service provider and a corresponding fee is automatically charged via the telecommunication bill. Up to this point, it has not been possible to determine the charges in real time for the value-added

service being used in the telecommunication network or to change the rate during a call to a value-added service provider.

The object of the invention is to disclose a method that permits a determination of charges in real time for value-added services by means of a telecommunication network.

This object is attained according to the invention by the characterizing features of claim 1.

Advantageous embodiments and modifications of the invention are disclosed in the dependent claims.

The advantage of the invention lies in the fact that the network operator of the telecommunication network and possibly the caller himself is immediately informed of the applicable rate for the value-added service so that the network operator can charge for the service in real time. This is particularly advantageous if the call is to be accounted for via a so-called prepaid subscriber relationship; in this case, the fee for the value-added service can be debited directly from the prepaid account.

The method described above also advantageously permits a rate change during a call to a value-added service provider.

An exemplary embodiment of the invention will be explained below in conjunction with Fig. 1. The general steps for executing the method are described in Fig. 1.

In this exemplary embodiment, it is assumed that a subscriber of a mobile telephone network wishes to use his mobile telephone terminal to access a value-added service in a public switched telephone network. A value-added

service is typically accessed by calling a special telephone number such as a so-called 0900 number. In the public switched telephone network, the rate is usually only determined upon establishment of the connection (offline billing). This does not make it possible for the network operator of the mobile telephone network to determine charges in real time.

According to the invention, the call to a 0900 number, e.g. the telephone number 0900 $x_1...x_9$, where the telephone number component $x_1...x_9$ identifies the value-added service, is first intercepted in an intelligent network element of the mobile telephone network and converted into a predetermined access number, e.g. 0121100 $x_1...x_9$ of the value-added service. This number is used to establish a connection between the intelligent network element and the value-added service provider, e.g. a corresponding communications server. The call to this access number occurs without the caller's knowledge and at no charge. Depending on the identification of the value-added service by the existing number component $x_1...x_9$, the call recipient, i.e. the value-added service provider, can determine the rate to be charged for the use of the service. This rate is transmitted by means of a signal from the value-added service provider to the intelligent network element of the mobile telephone network operator, in fact, through transmission of a new destination number for the requested value-added service. According to the invention, the user-to-user datum USR in the release message can be used to transmit the new destination number. The release message is a report that can be sent section by section in both directions of an intelligent network. This command terminates the user channel connection. The USR report can be sent via an end-to-end connection using the SCCP protocol.

The destination number transmitted has, for example, the format 01211 y_1y_2 $x_1...x_9$, where the rate is encoded at the positions y_1y_2; in this example, there are thus 99 possible rate levels. The release message is evaluated by the intelligent network element of the mobile telephone network operator and a connection is initiated between the original caller and this telephone number. The accounting

data, the so-called billing record, now contains the new telephone number 01211 y_1y_2 $x_1...x_9$ as the telephone number, which permits the accounting systems to allocate a rate. This telephone number can also be used to announce a price to the caller. If the value-added service provider then wishes to change the rate, it terminates the call and transmits a new destination number in the release message, e.g. 01211 z_1z_2 $x_1...x_9$; the above-described process repeats, i.e. the release message is evaluated by the intelligent network of the value-added service operator and a connection is initiated between the original caller and the new telephone number at the new rate, naturally. This method can be repeated any number of times.

The value-added service provider can, as needed, retain a context for the caller (CgPty) so that when entering the next price level, the caller is not treated as a new caller due to the fact that a new call is in fact physically being made.